

CLAIMS:

1. A device mountable to a bulkhead, the device comprising:
 - a sleeve having a seating surface, an aperture, and a thread form, and wherein the aperture has a first end and a second end;
 - an insert body having a ferrule receiving bore, the insert body mounted in the aperture of the sleeve;
 - a ferrule positioned in the ferrule receiving bore of the insert body, the ferrule having a first end and a second end, and the first end of the ferrule being in optical communication with the second end of the ferrule;
 - a lens mounted in the ferrule receiving bore adjacent to the first end of the ferrule, the lens being in optical communication with the first end of the ferrule, and wherein the lens is positioned near the first end of the aperture of the sleeve;
 - an optical subassembly in optical communication with the second end of the ferrule so that the lens is in optical communication with the optical subassembly;
 - an electrical connector;
 - a substrate attached to the optical subassembly and to the electrical connector, the substrate having electrical signal conditioning components mounted thereon, the electrical signal conditioning components electrically connect the optical subassembly to the electrical connector, and wherein the substrate is mounted in the aperture of the sleeve;
 - a cover mountable on the sleeve so as to substantially cover the second end of the aperture of the sleeve, and so as to reduce electromagnetic radiation from emanating from the second end of the aperture of the sleeve, and wherein the electrical connector projects through the cover; and

a panel nut having a thread form, and a seating surface, and wherein the thread form of the panel nut is complementary to the thread form of the sleeve so that the panel nut is removeably mountable on the sleeve, and wherein, in a mounted position of the device, the thread form of the panel nut fully engages the thread form of the sleeve so that the seating surface of the panel nut contacts a first surface of the bulkhead and the seating surface of the sleeve contacts a second surface of the bulkhead so that the device is securely mounted to the bulkhead.

2. A device according to Claim 1 wherein the sleeve includes a first key and a second key, and wherein the first and second keys are mateable with complementary keys of an externally positioned expanded beam connector.
3. A device according to Claim 2 wherein the first key has a thread form, and wherein the second key has a thread form.
4. A device according to Claim 3 wherein the insert body includes an alignment pin and an alignment pine hole.
5. A device according to Claim 4 wherein the sleeve includes an O-ring groove on the seating surface so as to circumscribe the aperture.
6. A device according to Claim 5 wherein the sleeve is made of a metallic material.
7. A device according to Claim 6 wherein the cover is made of a metallic material.
8. A device according to Claim 7 wherein the panel nut includes a lanyard groove.
9. A device according to Claim 8, further comprising a ribbon cable attached to the electrical connector.
10. A device according to Claim 9 wherein the optical subassembly is a transmitting device.

11. A device according to Claim 9 wherein the optical subassembly is a receiving device.
12. A device according to Claim 9 wherein the lens is a ball lens.
13. A device mountable to a bulkhead, the device comprising:
 - a sleeve having a seating surface, an aperture, and a thread form, and wherein the aperture has a first end and a second end;
 - an insert body having a first ferrule receiving bore, and a second ferrule receiving bore, the insert body mounted in the aperture of the sleeve;
 - a first ferrule positioned in the first ferrule receiving bore of the insert body, the first ferrule having a first end and a second end, and the first end of the first ferrule being in optical communication with the second end of the first ferrule;
 - a second ferrule positioned in the second ferrule receiving bore of the insert body, the second ferrule having a first end and a second end, and the first end of the second ferrule being in optical communication with the second end of the second ferrule;
 - a first lens mounted in the first ferrule receiving bore adjacent to the first end of the first ferrule, the first lens being in optical communication with the first end of the first ferrule, and wherein the first lens is positioned near the first end of the aperture of the sleeve;
 - a second lens mounted in the second ferrule receiving bore adjacent to the first end of the second ferrule, the second lens being in optical communication with the first end of the second ferrule, and wherein the second lens is positioned near the first end of the aperture of the sleeve;
 - a first optical subassembly in optical communication with the second end of the first ferrule so that the first lens is in optical communication with the first optical subassembly;

a second optical subassembly in optical communication with the second end of the second ferrule so that the second lens is in optical communication with the second optical subassembly;

an electrical connector;

a substrate attached to the first optical subassembly, the second optical subassembly, and to the electrical connector, the substrate having electrical signal conditioning components mounted thereon, the electrical signal conditioning components electrically connect the first optical subassembly to the electrical connector, and wherein the substrate is mounted in the aperture of the sleeve;

a cover mountable on the sleeve so as to substantially cover the second end of the aperture of the sleeve, and wherein the electrical connector projects through the cover; and

a panel nut having a thread form, and a seating surface, and wherein the thread form of the panel nut is complementary to the thread form of the sleeve so that the panel nut is removeably mountable on the sleeve, and wherein, in a mounted position of the device, the thread form of the panel nut fully engages the thread form of the sleeve so that the seating surface of the panel nut contacts a first surface of the bulkhead and the seating surface of the sleeve contacts a second surface of the bulkhead so that the device is securely mounted to the bulkhead.

14. A device according to Claim 13 wherein the first optical subassembly is a transmitting device.

15. A device according to Claim 14 wherein the second optical subassembly is a receiving device.

16. A device according to Claim 15 wherein the first lens is a ball lens, and wherein the second lens is a ball lens.

17. A device mountable to a bulkhead, the device comprising:

a sleeve having a seating surface, an aperture, and a thread form, and wherein the aperture has a first end and a second end;

an insert body having a first ferrule receiving bore, a second ferrule receiving bore, a third ferrule receiving bore, and a fourth ferrule receiving bore, the insert body mounted in the aperture of the sleeve;

a first ferrule positioned in the first ferrule receiving bore of the insert body, the first ferrule having a first end and a second end, and the first end of the first ferrule being in optical communication with the second end of the first ferrule;

a second ferrule positioned in the second ferrule receiving bore of the insert body, the second ferrule having a first end and a second end, and the first end of the second ferrule being in optical communication with the second end of the second ferrule;

a third ferrule positioned in the third ferrule receiving bore of the insert body, the third ferrule having a first end and a second end, and the first end of the third ferrule being in optical communication with the second end of the third ferrule;

a fourth ferrule positioned in the fourth ferrule receiving bore of the insert body, the fourth ferrule having a first end and a second end, and the first end of the fourth ferrule being in optical communication with the second end of the fourth ferrule;

a first lens mounted in the first ferrule receiving bore adjacent to the first end of the first ferrule, the first lens being in optical communication with the first end of the first ferrule, and wherein the first lens is positioned near the first end of the aperture of the sleeve;

a second lens mounted in the second ferrule receiving bore adjacent to the first end of the second ferrule, the second lens being in optical communication with the first end of the second ferrule, and wherein the second lens is positioned near the first end of the aperture of the sleeve;

a third lens mounted in the third ferrule receiving bore adjacent to the first end of the third ferrule, the third lens being in optical communication with the first end of the third ferrule, and wherein the third lens is positioned near the first end of the aperture of the sleeve;

a fourth lens mounted in the fourth ferrule receiving bore adjacent to the first end of the fourth ferrule, the fourth lens being in optical communication with the first end of the fourth ferrule, and wherein the fourth lens is positioned near the first end of the aperture of the sleeve;

a first optical subassembly in optical communication with the second end of the first ferrule so that the first lens is in optical communication with the first optical subassembly;

a second optical subassembly in optical communication with the second end of the second ferrule so that the second lens is in optical communication with the second optical subassembly;

a third optical subassembly in optical communication with the second end of the third ferrule so that the third lens is in optical communication with the third optical subassembly;

a fourth optical subassembly in optical communication with the second end of the fourth ferrule so that the fourth lens is in optical communication with the fourth optical subassembly;

an electrical connector;

a substrate attached to the first optical subassembly, the second optical subassembly, the third optical subassembly, the fourth optical subassembly, and to the electrical connector, the substrate having electrical signal conditioning components mounted thereon, the electrical signal

conditioning components electrically connect the first optical subassembly to the electrical connector, and wherein the substrate is mounted in the aperture of the sleeve;

a cover mountable on the sleeve so as to substantially cover the second end of the aperture of the sleeve, and wherein the electrical connector projects through the cover; and

a panel nut having a thread form, and a seating surface, and wherein the thread form of the panel nut is complementary to the thread form of the sleeve so that the panel nut is removeably mountable on the sleeve, and wherein, in a mounted position of the device, the thread form of the panel nut fully engages the thread form of the sleeve so that the seating surface of the panel nut contacts a first surface of the bulkhead and the seating surface of the sleeve contacts a second surface of the bulkhead so that the device is securely mounted to the bulkhead.

18. A device according to Claim 17 wherein the first optical subassembly is a transmitting device, and wherein the second optical subassembly is a transmitting device.

19. A device according to Claim 18 wherein the third optical subassembly is a receiving device, and wherein the fourth optical subassembly is a receiving device.

20. A device according to Claim 19 wherein the first lens is a ball lens, and wherein the second lens is a ball lens, and wherein the third lens is a ball lens, and wherein the fourth lens is a ball lens.